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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

Continuation of 11. does NOT place the application in condition for allowance because:

Regarding Applicant's traversal of the rejection of claims 23 and 25 under 35 U.S.C. 112, first paragraph and 35 U.S.C. 112, second paragraph:

The Applicant argues that "ohmically coupled" means connected electrically directly. This is not correct. The term "ohmically coupled" has a specific meaning and does not mean "connected electrically directly". See, for example, Ruzyllo (Semiconductor Glossary, entry for "ohmic contact") which teaches that an ohmic coupling has resistance that is independent of applied voltage (as set forth in Ohm's law). Electrically connecting two elements together does not inherently result in them being "ohmically coupled", but instead can form, for example, a Schottky contact, which is non-ohmic. Furthermore, the Applicant's own specification directly contradicts that that the organo-resistive material is ohmically coupled to the electrolyte. Rather, the specification clearly teaches that the organo-resistive material *is not* ohmically coupled to the electrolyte but rather the resistance (conductivity) changes as a result of the voltage applied. See the statements of "the resistance (and with it the conductivity) is in this case altered by several orders of magnitude" (Page 2, Lines 19-20) and more specifically "applying an electrical voltage between 2 and 3 initiates an ionic current through 4, whereby organo-resistive material 2 is either oxidized or reduced and is thus rendered conductive or non-conductive" (Page 5, Lines 8-11). The Applicant also attempts to distinguish "ohmic coupling" from "ohmic contact" in evidence reference of Ruzyllo provided by the examiner (see Remarks Pages 5-6 and 8). These arguments

are not convincing because "ohmic" is the critical word. Nothing about "ohmic contact" implies or requires physical contact. Instead, the definition is provided in support of the fact that ohmic requires that Ohm's law be met (i.e. that resistance is constant regardless of applied voltage). The Applicant's arguments that coupling can include capacitively, inductively, and field effect are not relevant because the none of these are ohmic. The Applicant's argument that resistance is independent of applied voltage under Ohm's law is simply and factually incorrect. Ohm's law is V= IR, thereby setting the resistance constant with respect to any particular applied voltage (since the resulting current is directly proportional thereto). As such, the rejections of claims 23 and 25 under 35 U.S.C. 112, first paragraph and 35 U.S.C. 112, second paragraph are proper and maintained.

Regarding Applicant's traversal of the rejection of claims 1-4, 6-7, 9, 12-13 and 25-26 under 35 U.S.C. 102(b) as anticipated by Roth (Languir, Vol. 18; *supplied to Applicant with Office action dated 19 September 2008*) and rejections under 103(a) citing Roth:

The Applicant argues that Roth does not teach "an organo-resistive material embedded in the electrolyte to form the memory unit". Applicant argues that Roth teaches a self-assembled monolayer formed on the surface of an electrode which is immersed in the electrolyte. This is not persuasive for the following reasons. As the Office action points out the self-assembled monolayer (SAM) *is* the organo-resistive material. The self-assembled monolayer (which is the organo-resistive material) is on an electrode 2000 Angstroms high, with a PDMS well enclosing the SAM covered electrode and embedded in the electrolyte (see Section Band Electrodes on Page 4032, for example or Lines 1-9 of Right Col., on Page 4032). The relevant portions of the

reference reads "All potentials are versus Ag/Ag+ and recorded *in* dried, distilled CH_2Cl_2 containing 0.1 M Bu_4NPF_6" (see last three lines of Page 2360, Left Col.) and "the PM0 SAM on a 25 μm diam Au electro *in* a thin film of an electrolyte solution containing 0.10 M Bu_4NPF_6 in dried, distilled CH_2Cl_2" (see caption of Figure 2). Applicant's citation of the passage of Page 4032, Left Col., Lines 3-7 is not relevant to the rejection as set forth because this passage is about forming the self-assembled monolayer (which is the organo-resistive material) on an electrode. The Applicant's argument that Roth does not expose the organo-resistive material and that "since Roth-Langmuir places an electrode in a solution including an organo-resistive material to form a self-assembled monolayer on the surface of the electrode, and then exposes the electrode to an electrolyte solution, Roth has no 'organo-resistive material embedded in the electrolyte to form the memory unit'.". This is incorrect. As already noted, the self-assembled monolayer (SAM) *is* the organo-resistive material and since the electrode has the SAM thereon when exposed to the electrolyte. Therefore, Roth clearly teaches the claimed invention.

Regarding Applicant's traversal of the rejection of claims 1-4, 6-7, 9, 12-13 and 25-26 under 35 U.S.C. 102(b) as anticipated by Roth (J. Vac. Sci. Technol. B, Vol. 18*; supplied to Applicant with Office action dated 19 September 2008*) and rejections under 103(a) citing Roth and Beckmann (`536):

The Applicant argues that Roth does not teach "an organo-resistive material embedded in the electrolyte to form the memory unit". Applicant points to Page 2360, Left Col., Lines 7-11 of Section II, Experiment for support. This is not persuasive for the following reasons. The examiner notes that the Applicant's citation of Page 2360, Left Col., Lines 7-11 of Section II,

Experiment is not relevant to the rejection. As the Office action points out the organo-resistive material is indeed embedded in the electrolyte. The relevant portions of the reference reads "All potentials are versus Ag/Ag+ and recorded *in* dried, distilled CH_2Cl_2 containing 0.1 M Bu_4NPF_6" (see last three lines of Page 2360, Left Col.) and "the PM0 SAM on a 25 μm diam Au electro *in* a thin film of an electrolyte solution containing 0.10 M Bu_4NPF_6 in dried, distilled CH_2Cl_2" (see caption of Figure 2). Applicant's citation of this very passage (see Remarks Page 10, Lines 3-5) confirms that Roth meets the claim by teaching the organo-resistive material embedded *in* the electrolyte. In addition, Applicant's argument regarding the microelectrode being removed and citation of Page 2360, Left Col., Lines 11-12 of Section II, Experiment is also irrelevant to the rejection because it is about forming the organo-resistive material on an electrode.

Regarding Applicant's traversal of the rejection of claims 1-6, 9-14 and 25-26 under 35 U.S.C. 102(e) as anticipated by Sakurai (`879):

The Applicant argues that Sakurai does not teach an organo-resistive material embedded in the electrolyte to form the memory unit and cites Col. 17, Lines 38-43. The Applicant further argues that Sakurai teaches that the device is used as a solar cell and not used as a memory unit. This is not persuasive. The Applicant's position relies upon a different *use* for the claimed device than the prior art intends to use the device for. In response the Examiner notes that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. See, e.g., *In re Pearson*, 181 USPQ 641 (CCPA); *In re Minks*, 169 USPQ 120 (Bd Appeals); *In re Casey*, 152 USPQ 235 (CCPA 1967); *In re Otto*, 136 USPQ 458,

459 (CCPA 1963). See MPEP § 2114. As pointed out by the Office action, the prior art of Sakurai teaches all of the limitations of the claim and therefore *teaches a structure that is identical to the claimed invention*. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). See MPEP § 2112.01. The manner of operating the device does not differentiate the apparatus claim from the prior art. See MPEP § 2114. The Applicant's argument that the claimed invention has a different structure because Sakuri teaches a solar cell and that a solar cell is submitted to be a structural difference is not convincing. The Applicant fails to point out how the device of Sakuri is structurally different from the claims.

The Applicant also argues that "in Sakurai, moreover, an aluminum electrode 4 is formed on the Mg phthalocyanine coating layer via an aqueous electrolyte solution, instead of 'an organo-resistive material embedded in the electrolyte to form the memory unit,' as recited in claim 1" (see Remarks Page 13, Lines 10-12). This is not persuasive. This argument is not commensurate with the rejection set forth and is therefore not relevant to the issues at hand. Instead, the Office action cites to Element 4 of Sakurai as a conductive electrode material which is separated from the organo-resistive material by the electrolyte. The examiner never refers to Element 4 as the organo-resistive material embedded in the electrolyte.

The Applicant also argues that the dendritic structure (Element 13) is not an organo-resistive material and cites Col. 17, Lines 43-47 for support of this argument. However, this citation actually states that the polypyrrole has dendritic structures. In other words, the dendrites

are polypyrrole (see also Col. 17, Lines 53-55 which reads "when a section of the resultant polypyrrole film 2 was observed with a TEM dendritic structures 13 of a few μm high were found"), which *is* the organo-resistive material (the examiner notes that the Applicant's own specification teaches that polypyrrole is an organo-resistive material - see Page 3, Line 19). As such, the Applicant's arguments are in direct contradiction to the teachings of the Applicant's own specification and are not convincing.

The Applicant also argues that the pyramidal projections (Element 14) is not an organo-resistive material and cites Col. 18, Lines 45-49 for support of this argument. However, this citation actually states that the polypyrrole has pyramidal projections. In other words, the pyramidal projections are polypyrrole, which *is* the organo-resistive material (the examiner notes that the Applicant's own specification teaches that polypyrrole is an organo-resistive material - see Page 3, Line 19). As such, the Applicant's arguments are in direct contradiction to the teachings of the Applicant's own specification and are not convincing.

Regarding Applicant's traversal of the rejection of claims 1-14 and 23-26 under 35 U.S.C. 102(e) as anticipated by Misra ('270):

The Applicant argues that Misra does not teach an organo-resistive material embedded in the electrolyte to form the memory unit and argues that Misra teaches that the device is used as a crossbar array and not used as a memory unit. This is not persuasive. The Applicant's position relies upon a different *use* for the claimed device than the prior art intends to use the device for. In response the Examiner notes that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to

patentably distinguish the claimed invention from the prior art. See, e.g., *In re Pearson*, 181 USPQ 641 (CCPA); *In re Minks*, 169 USPQ 120 (Bd Appeals); *In re Casey*, 152 USPQ 235 (CCPA 1967); *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). See MPEP § 2114. As pointed out by the Office action, the prior art of Misra teaches all of the limitations of the claim and therefore *teaches a structure that is identical to the claimed invention*. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). See MPEP § 2112.01. The manner of operating the device does not differentiate the apparatus claim from the prior art. See MPEP § 2114.

The Applicant also argues that Misra mentions no organo-resistive material and cites Col. 4, Lines 36-38 arguing that PANI is not an organo-resistive material. However, the examiner notes that this citation, including the PANI material, actually supports that Misra teaches the organo-resistive material because the Applicant's own specification teaches that PANI is an organo-resistive material (see Specification Page 3, Line 18). The Applicant argues that Misra does not teach an organo-resistive material and attempts to use the teachings of Misra as evidence to support their position. Specifically the Applicant cites Col. 4, Lines 36-38 as evidence that the material of PANI cited by Misra cannot be an organo-resistive material of the claims since Misra refers to the material as intrinsically conducting. This is not persuasive. In fact, this position and evidence cited by the Applicant directly and explicitly contradicts the Applicant's own specification. Specifically, the Applicant explicitly teaches that PANI is an organo-resistive material in the invention (see Page 2, Line 12 as well as Page 3, Lines 12 and

18). Furthermore, the Applicant's specification teaches that "all intrinsically conductive... organic materials can be used" (see Page 3, Lines 16-17). The Applicant's argument amounts to an attempt to disown their own specification and material of PANI (which, as shown herein, is taught by the Applicant as an organo-resistive material). This position is untenable. The Applicant cannot simply ignore the teachings of their own specification in attempting to distinguish the claims from the prior art. As such, the Applicant's arguments are in direct contradiction to the teachings of the Applicant's own specification and are not convincing.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW W. SUCH whose telephone number is (571)272-8895. The examiner can normally be reached on Monday - Friday 9AM-5PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kiesha Bryant can be reached on (571) 272-1844. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Matthew W. Such/
Primary Examiner, Art Unit 2891